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Wadden Mosaic: Understanding the ecological functioning of the subtidal Wadden Sea

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Abstract

The Wadden Sea is of great ecological importance and supports many species of birds and fish. These species depend on a plethora of benthic invertebrate species living in the sediment. While the intertidal mudflats are relatively well studied, the biodiversity and food web structure of the subtidal Wadden Sea is relatively unknown. It is thought that the sea floor once consisted of a diverse mosaic of sand, silt, boulders, mussel beds, shells, seagrass beds, flat oysters and other structures, but there are indicators that this mosaic has become more homogeneous over time. Over the course of the next four years, the Wadden Mosaic project aims to shed light on this hidden part of the Wadden Sea. We will map biodiversity and link the benthic communities to habitat characteristics. In addition, we will test the feasibility and effects of possible management actions by: i) applying hard substrates, ii) (re-)introducing epibenthic shellfish beds, iii) testing restoration possibilities of subtidal seagrass meadows and iv) testing the effectiveness of excluding bottom trawling fisheries from marine protected areas. Here, we will present the first results from a large sampling campaign of 1394 boxcore samples, which were taken in a sampling grid throughout the whole subtidal Dutch Wadden Sea. Overall, the results from the project will improve our understanding of the ecological functioning of the subtidal Wadden Sea, and predict the effectiveness of management practices aimed at sustaining or increasing biodiversity.

Figure 1. Boxcore samples are used to investigate the sediment and community composition of the subtidal Wadden Sea. In this case an epibenthic shellfish bed was sampled.

Figure 2. Visualization of all 1394 subtidal locations (circles) where boxcore samples were taken.

Keywords

Subtidal Wadden Sea, Boxcore, Biodiversity, Food web structure